



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D204-635-041
Job Sheet 169940



Part No: D204-635-041

Job Qty: 1 ea

Part Name: Replacement Skidtube with Standard Wearplates Fits LH or RH



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 1/3/18

Job Tracking No:

Due Date: 2/2/18

Created By: Mario Poulin

Type: SOLD

Description:

Note: URF 17-569 DWG REV F SHEETS 1,2,3,6 IPP Rev:F 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ IPP Rev:G 07-07-09 Added SS Wearplates & Gaskets JLM IPP RevH: add identify and stock seq DD 10.01.28 ver:EC IPP Rev:I 10.12.01 as per DEO DD ver:EC IPP REV:J 12.01.23 AS PER ECN11-684 DD VERF:EC

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		2/1/18	0.00	0.00	Start Up Skid tubes-1		
110	Skid tubes	1 pcs		2/1/18	0.00	1.00	Skid tubes-1		Mb
113	QC	1 pcs		2/1/18	0.00	0.00	QC7-1		MB
116	Skid tubes	1 pcs		2/1/18	0.00	1.00	Skid tubes-1		MB
118	QC	1 pcs		2/1/18	0.00	0.00	QC5		MB
120	CNC Bend Skid tubes	1 pcs		2/1/18	0.00	1.12	CNC Bend Skid tube		MB
130	Skid tubes	1 pcs		2/1/18	0.00	1.00	Skid tubes-1		MB
140	QC	1 pcs		2/1/18	0.00	0.00	QC6 - QC5		MB
150	Skid tubes	1 pcs		2/1/18	0.00	1.00	Skid tubes-1		MB
160	QC	1 pcs		2/1/18	0.00	0.00	QC10		MB
170	QC	1 pcs		2/1/18	0.00	0.00	QC6		MB
175	HandFinish	1 pcs		2/1/18	0.00	0.10	HandFinish2		MB
180	Powdercoat	1 pcs		2/1/18	0.00	0.46	Powdercoat1		MB
190	QC	1 pcs		2/1/18	0.00	0.00	QC3		MB
200	HandFinish	1 pcs		2/2/18	0.00	1.67	HandFinish4		MB
210	QC	1 pcs		2/2/18	0.00	0.00	QC5		MB
213	DC	1 pcs		2/2/18	0.00	0.00	QC N/A make oil		MB
215	Packaging	1 pcs		2/2/18	0.00	0.00	Packaging3-1		MB
220	QC21-FG	1 Ea		2/2/18	0.00	0.00	QC21		MB

Part Op 110 - 1- Inspect mat'l D2500-1-190 for damage 2-Cut D2500-1-190 per Dwg D2590 .Deburr ends 3-Drill pilot holes using Descriptions: drill jig DT 8149 & DT8711-1&-2 and open to finish size as per dwg 4-Deburr holes as per QSI002 section 4.2.3 and blow out all chips from inside of tube. Test fit DT9916 on fwd and aft saddles. 5-Acid etch and Alodine tube per QSI 005 4.1

113 - QC7-Inspect Chemical Conversion Coat

116 - 1-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting Pick: Qty Part Number Description Batch A/R Sikaflex-291 1138694 Sikaflex expire date: 2018-01-21 Start Time: 7:15 am Fin Time:

118 - QC5- Inspect part completeness to step on W/O

120 - Bend as per program D2590.C on CNC Bender

130 - 1-Cut tubes as per Dwg. D2590 . 2-Deburr ends after cutting.

140 - QC6- All purchased or subcontracted products

150 - 1-Prepare tube for welding D2576-3 Step Remove alodine as required. 2-Weld step D2576 as per Dwg. D2590 and QSI 004 A/R Aluminum Rod 1138673 3-Grind weld flush on step 4-Insert D4202-1 spacer, swage as per QSI002 and trim/ grind flush per QSI002 and as per dwg 5-Drill holes for wearplates using DT 8218 & DT8937 Open holes to 19/64", adjust stopper not to hit web.Deburr 6-Drill pilot holes for aft cap using DT 8215 Open holes to #6 Drill bit. Deburr 7-Drill

5640631x1

6084

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐		AGAINST DEPARTMENT/PROCESS Cross tube ☐ Small Fab ☐ Finishing ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Quality ☐ Other ☐							
Date : _____		Step #: _____		QTY Effective _____									
Description Work Order Deviation													
Root Cause <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%; vertical-align: top;"> Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ </td> <td style="width:33%; vertical-align: top;"> No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐ </td> <td style="width:33%; vertical-align: top;"> Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ </td> <td style="width:33%; vertical-align: top;"> Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete ☐ Drill Holes ☐ </td> </tr> </table>						Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete ☐ Drill Holes ☐				
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete ☐ Drill Holes ☐										
OTHER : _____													

S040631
 Replacement Skidtube with Standard Wearplates Fits LH or RH
PART NO: D204-635-041
Original Serial #: S040631
Revision:
Operation: Start up Operation 02/08/18
Change No: CHG005
Job No: 169940

pilot holes for Tow ring using DT9425; open to .640" and Deburr ****verified dim. before drilling****

160 - QC10- Inspect visual per QSI004- ground welds

170 - QC6- All purchased or subcontracted products

175 - Pressure Wash per QSI005 4.3 Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

180 - White Gloss (Ref 4.3.5.1) per QSI005 4.3-Alum START TIME: 7:55 OVEN TEMPERATURE: 320

FINISH TIME: 8:05 M 139467

190 - QC3- Inspect Part Finish

200 - 1-Install inserts & wearplates & gaskets using a drop of Sikaflex on insert holes before installing wearplates A/R Sikaflex-291 M 138654 Sikaflex expire date: 1F704 2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580 3-Inspect for foreign object per QSI 024 4-Install 2855 Aft Cap as per Dwg D2590 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive A/R Sikaflex-291 M 138654 Sikaflex expire date: 18/04

5-Wing Walk as per Dwg D2590 and QSI 005 4.4 Batch: M 138711

210 - QC5- Inspect part completeness to step on W/O

213 - Document Control Photocopy bluefile & type labels per PPP D204-635-041 CHG 005

215 - Identify as per dwg & Stock Location:

220 - QC21- Final Inspection - Work Order Release

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	D2500-1-190 <u>S030 536</u>	1	116	0	0
	D2597 <u>B13676</u>	1	4	0	0
150-Skidtubes	D2576-3 <u>B156023</u>	1	58	0	0
<u>200</u>	D4202-1 <u>S030798</u>	17	719	0	0
<u>100</u> Powdercoat	<u>A154</u> AL67 1032-130 <u>S007279</u>	44	10	0	0
	AN3-5A <u>S013737-1</u>	2	455	0	0
	AN3C4A <u>S019354</u>	44	2,363	0	0
	D2594-1 <u>S025442</u>	10	526	0	0
	D2594-3 <u>S035836</u>	10	147	0	0
	D2855 <u>F151613</u>	1	80	0	0
	D3564-11 <u>S040746</u>	1	35	0	0
	D3564-13 <u>S024217</u>	1	21	0	0
	D3564-7 <u>S042949</u>	1	9	0	0
	D3564-9 <u>S031934</u>	1	17	0	0
	D3566-1	2	25	0	0
	D3566-13	1	4	0	0
	D3566-7	1	5	0	0
	NAS1149C0332R <u>S019380</u>	44	4,843	0	0
	NAS1149D0332J <u>S020606</u>	2	668	0	0

Part Specifications

Specifications could not be found.

Plex 1/3/18 2:27 PM dart.poulin.mario

000956

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :	MRB (QSI042) Approval		
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

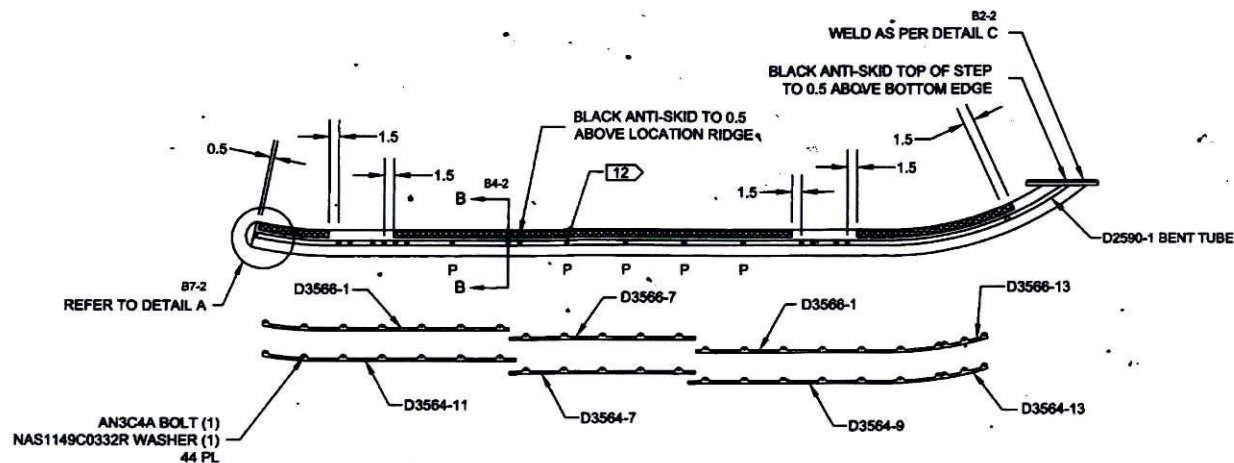
LIST OF MATERIALS				
ITEM	QTY -041	QTY -043	PART NUMBER	DESCRIPTION
1	X		D2590-041	SKIDTUBE ASSEMBLY
2		X	D2590-043	SKIDTUBE ASSEMBLY
3	1	1	D2500-1-190	EXTRUSION
4		16	D2570	BUSHING
5	1	1	D2576-3	STEP
6	10	4	D2594-1	PLUG
7	10	4	D2594-3	O-RING
8	1	1	D2597	204 WEB
9	1	1	D2855	AFT CAP
10	1		D3564-7	WEARSHOE
11	1		D3564-9	WEARSHOE
12	1		D3564-11	WEARSHOE
13	1		D3564-13	WEARSHOE
14	2		D3566-1	GASKET
15	1		D3566-7	GASKET
16	1		D3566-13	GASKET
17	17	22	D4202-1	SPACER
18		1	D4408-041	WEARPLATE ASSEMBLY
19		1	D4408-043	WEARPLATE ASSEMBLY
20	44		ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
21	44		AN3C4A	BOLT
22	2	2	AN3-5A	BOLT
23		8	AN4-45A	BOLT
24	44		NAS1149C0332R	WASHER (AN960C10L)
25	2	2	NAS1149D0332J	WASHER (AN960JD10L)
26		8	MS21042-4	NUT (OR MS21042L4)

GENERAL NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2597 WEB
POWDER COAT ASSEMBLY GLOSS WHITE 4.3.5.1 PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4.
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D2590-041 = 31.5 lbs
D2590-043 = 33.3 lbs
- 8) WELDING PER DART QSI 004.
- 9) INSERT D2597 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 10) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 11) USE DART DRILL TEMPLATE DT8218 ONLY FOR D2590-041 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION B-8 (44 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/291.
- 12) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (10 PLACES FOR D2590-041 AND 8 PLACES FOR D2590-043).
- 13) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION.

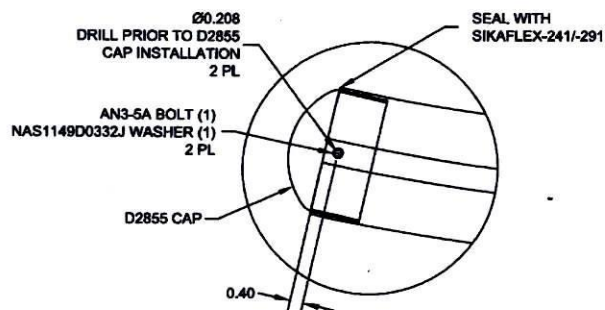
RELEASED
2013-07-15

F	INCORPORATE DEO D2590-E-1 PER PAR12-218	DC	13.06.20
E	ADD D2590-043; DT8218 WAS TD2577-204 (ZN C4-1); REFORMATTED DRAWING TO CURRENT STANDARDS	RF	11.06.21
D	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124	PH	07.04.05
C	REDRAWN, INCLUDED DEO 9094/ 9097	CP	98.08.28
B	AS MANUFACTURED	DS	96.12.02
A	NEW ISSUE	DS	98.08.16
REV.	DESCRIPTION	BY	DATE
DESIGN	4	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	DC		
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 1 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	4	204 SKIDTUBE ASSEMBLY	NTS
DATE	13.06.20	COPYRIGHT © 1998 BY DART AEROSPACE LTD THIS DOCUMENT IS PRELIMINARY AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR FOR THE DISSEMINATION OF ANY INFORMATION WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

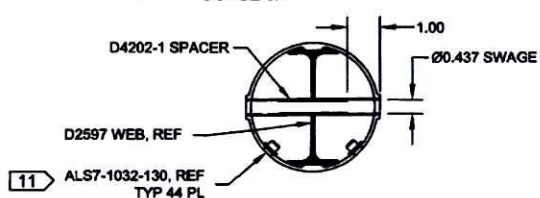


D2590-041 ASSEMBLY DETAIL

DETAIL A C8-2
SCALE 5X

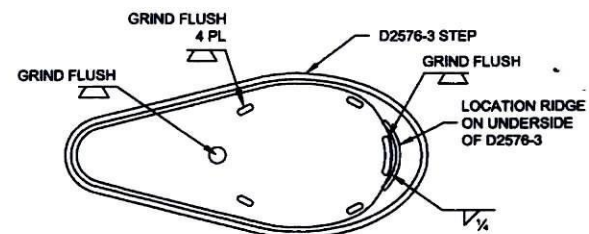


SECTION B-B D5-2
SCALE 5X



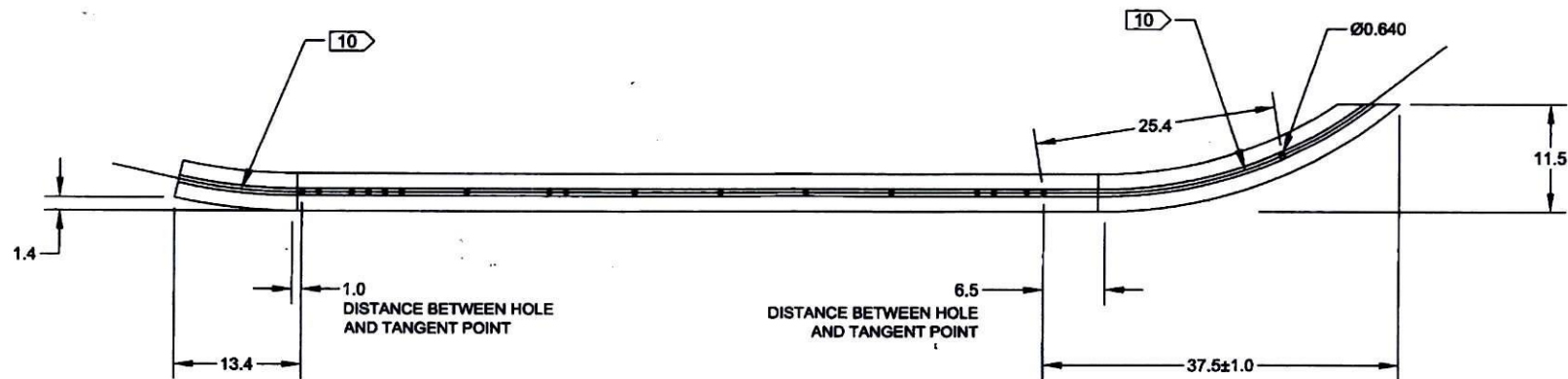
AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. INSERT D4202-1 SPACER (17 PLACES)
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002

DETAIL C D3-2
SCALE 5X



DESIGN	4	DART AEROSPACE LTD	
DRAWN	DC	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 2 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.		204 SKIDTUBE ASSEMBLY	NTS
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2013-07-15



D2590-1 BENT TUBE
(MAKE FROM D2590-101 TUBE)

RELEASED
2013-07-15
WMD

DESIGN	<i>[Signature]</i>	DART AEROSPACE LTD	
DRAWN	DC	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 3 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	204 SKIDTUBE ASSEMBLY	NTS
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8 7 6 5 4 3 2 1

D

D

C

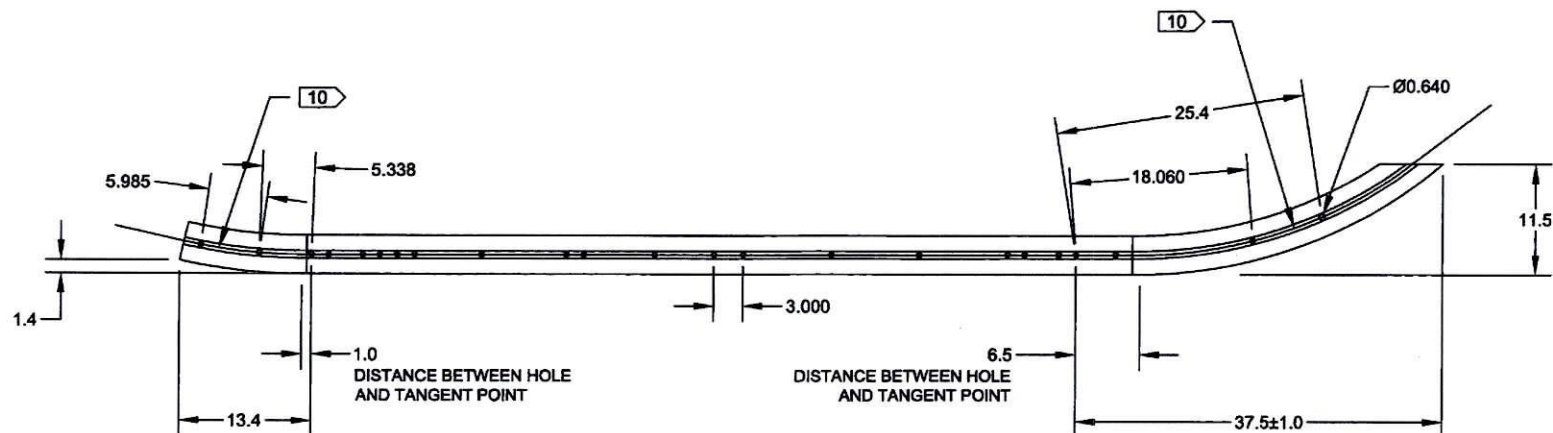
C

B

B

A

A

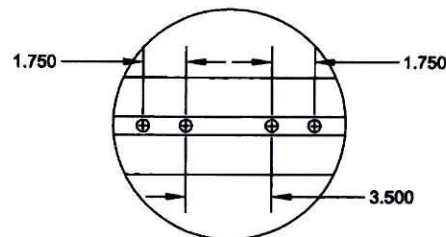
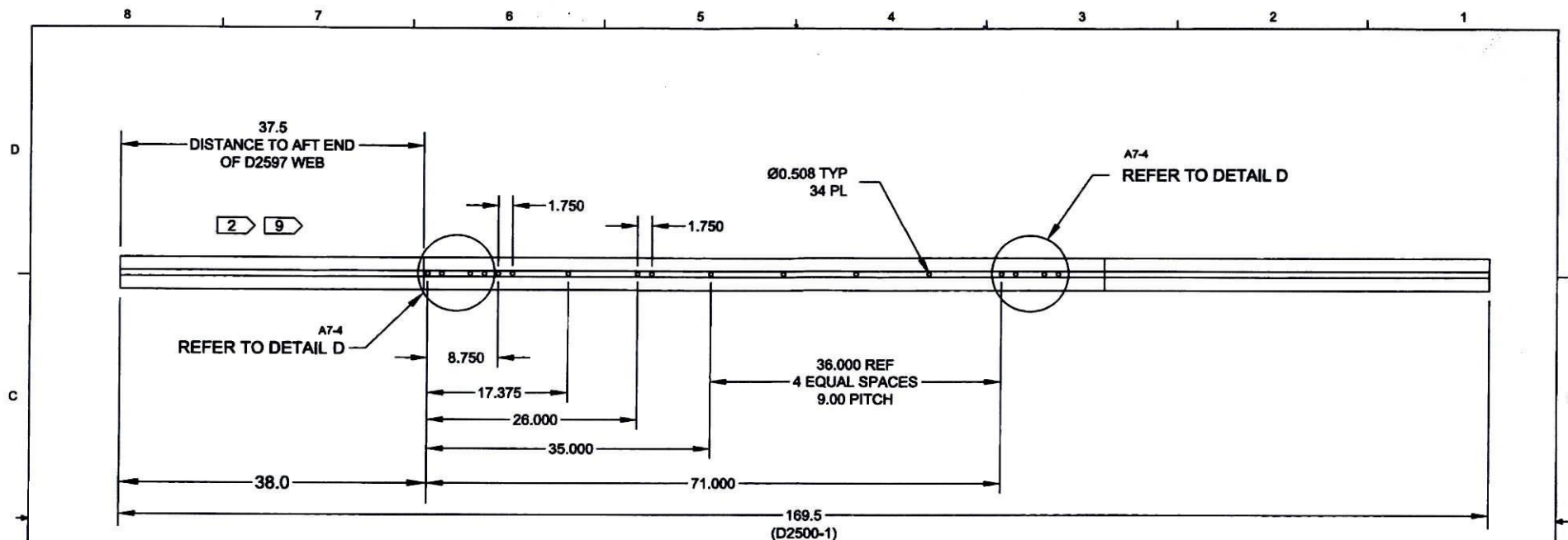


D2590-3 BENT TUBE
(MAKE FROM D2590-101 TUBE)

RELEASED
2013-07-15
MP

DESIGN	DC	DART AEROSPACE LTD	
DRAWN	DC	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 5 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	HS	204 SKIDTUBE ASSEMBLY	NTS
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8 7 6 5 4 3 2 1



D2590-101 TUBE

DETAIL D
SCALE 5X

D3-4
C7-4

RELEASED
2013-07-15

DESIGN	4	DART AEROSPACE LTD	
DRAWN	DC	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 6 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	4	204 SKIDTUBE ASSEMBLY	NTS
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Change Record

PAGE 1 OF 1

Part Number: D204-635-041

Description: REPLACEMENT SKIDTUBE w/ STANDARD WEARPLATES, LH/RH

[illegible]